REMARKS

A substitute abstract is submitted herewith. Please replace the original abstract with substitute abstract.

Claim 5 is objected to because it is missing a period at the end of the sentence. Claim 5 is amended to end with a period.

New drawings are submitted herewith to overcome the objection that figure 1 is missing reference numerals 2 and 4. A new figure 1 is submitted with reference numerals 2 and 4.

Claims 2, 3, 5-9 and 12-14 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. All of these rejections may be resolved by review of the specifications of patent applications incorporated by reference on pages 8 and 9, paragraph [27], which are Patent Application Nos: 10/677,034, 10/676,306 and 10/677,009.

Claim 2 is rejected because it recites the limitation "separating likely self-luminous image elements from likely reflective image elements," which, the examiner contends is not described in the specification. This process is described using several exemplary embodiments in the specification of U.S. Patent Application No. 10/677,034 ('034), incorporated in the present application by reference in paragraph [27]. Described exemplary methods comprise an image mask or map (e.g., paras. [14]-[30] of '034) or the use of a weighting factor (e.g., paras [23]-[58] of '034).

Claim 3 is rejected for citing the use of a binary value to indicate a self-luminous attribute. This element is disclosed in the '034 application in paragraph [46] and elsewhere.

Claim 5 is rejected for citing "separating self-luminous image elements comprising determining the proximity of an image element to image boundaries." This element is disclosed in the '034 application in paragraph [20] and elsewhere.

Claim 6 is rejected for citing "comparing the color characteristics of an image element to the color characteristics of reflective surfaces under a known illuminant." This element is disclosed in the incorporated '034 application in paragraphs [19], [20], [57] and elsewhere.

Claim 7 is rejected for citing "comparing the luminance characteristics of an image element to those of known self-luminous objects." This element is disclose in the incorporated '034 application in paragraph [25] and elsewhere.

Claim 8 is rejected for citing "calculating an image chromaticity gamut based solely on said reflective image elements." This element is disclosed in the incorporated '034 application in paragraph [54] and elsewhere.

Claim 9 is rejected for citing "calculating an image chromaticity gamut based on a weighted distribution of said reflective image elements and said self-luminous elements … ." This element is disclosed in the incorporated '034 application in paragraphs [54]-[58] and elsewhere.

Claim 11 is rejected for citing "image elements that are more likely to be self-luminous have a lower weight." This element is disclosed in the incorporated '034 application in paragraph [58] and elsewhere.

Claim 12 is rejected for citing "weight value related to the probability that an image element in an image corresponds to a reflective surface." This element is disclosed in the incorporated '034 application in paragraph [58] and elsewhere.

Claim 12 is also rejected for citing "a weight value used to increment the accumulator of a corresponding histogram bin." This element is disclosed in the specification of the present application in paragraph [26] and elsewhere.

Claim 12 is also rejected for citing the element "the accumulator" in line 9 without antecedent basis. Claim 12 is amended herein to correct the lack of antecedent basis.

Claim 16 is rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claim 16 is amended as a computer-readable media claim, which is commonly accepted as statutory subject matter.

Claims 1 and 4 are rejected under 35 U.S.C. §102, as being anticipated by Finlayson, G.D. Hordley, S.D., Hubel, P.M. "Color by Correlation: A Simple, Unifying Framework for Color Constancy,: IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 23, pp. 1209-1221, 2001 (Finlayson et al).

Claim 4 is canceled.

Claim 1 is amended to more particularly point out the novel aspects of the claimed embodiments of the present invention. Claim 1 now comprises the elements of "generating an illuminant color gamut histogram for each of said color gamut models; generating an image color gamut histogram for said image color gamut; ... [and] determining a distance match metric for each of said candidate illuminants with reference to said image color gamut, wherein said distance match metric is related to the sum of the

differences between corresponding illuminant color gamut histogram values and image

color gamut histogram values." These elements are not taught in Finlayson et al, which

teaches a correlation-based approach that does not deal directly with chromaticity

histogram values. Accordingly, the examiner is requested to withdraw this rejection in

light of the current amendments.

Claims 2, 5-9, 11, 15 and 16 are rejected under 35 U.S.C. §103(a), as being unpatentable

over Finlayson, G.D. Hordley, S.D., Hubel, P.M. "Color by Correlation: A Simple, Unifying

Framework for Color Constancy,: IEEE Trans. Pattern Analysis and Machine Intelligence, vol.

23, pp. 1209-1221, 2001 (Finlayson et al) in view of U.S. Patent No. 6,249,601 to Kim et al

(Kim et al).

Claims 2, 5-7, 11, 15 and 16 have been amended. Claims 8 and 9 are dependent

on claim 2, which has been amended, and are, therefore, amended by dependence on

claim 2. Claim 2 now comprises the elements of "generating candidate illuminant color

gamut histograms for each of said plurality of candidate illuminants," "generating an

image color gamut histogram based on said image color gamut," and "determining a

match metric for each of said candidate illuminants, wherein said match metric is related

to differences between corresponding values in said image color gamut histogram and

said candidate illuminant color gamut histograms." Claims 15 and 16 have similar

elements with the further limitation that the match metric is related to the "sum of the

differences" between corresponding values in said image color gamut histogram and said

candidate illuminant color gamut histograms

With respect to claims 2, 5-9, 15 and 16, the cited combination of Finlayson et al and Kim et al do not teach these added limitations. The examiner relies on Finlayson et al to teach illuminant detection element and on Kim et al to teach the detection of self-luminous elements. While the two references may arguably be combined, they do not modify elements of the other reference, but simply form an additive combination of elements since the methods do not have overlapping elements. The combination of Finlayson et al and Kim et al do not teach the use of a match metric that is related to differences between corresponding values in an image color gamut histogram and candidate illuminant color gamut histograms. Finlayson et al mention, as cited by the examiner (Fig. 2, caption), a histogram of the image. However, this histogram is modified by the chist() and thresh() functions to create a binary vector that simply indicates whether a chromaticity occurs in the image. These functions do not preserve the histogram magnitudes or values, which are used and claimed in these claims, as amended. Kim et al, while related to detection of self-luminous elements reveals nothing in relation to the image chromaticity histogram or the specific elements of Finlayson et al. Accordingly, these claims, as amended, comprise novel and non-obvious elements not taught in the cited references and should be allowed in their current form.

Claim 11 has been amended to comprise the element of "identifying image elements according to their likelihood of being self-luminous, wherein said identifying comprises determining a proximity of said image elements to an image boundary and said image elements are identified as more likely to be self-luminous when they are more proximate to an image boundary." This element is supported in a parent application, U.S.

Patent Application No. 10/677,034, now issued as U.S. Patent No. 67,064,769, issued on

June 20, 2006. This element is not taught in the combination of Finlayson et al and Kim

et al as shown by the prosecution history in the parent case.

Claim 10 is rejected under 35 U.S.C. §103(a), as being unpatentable over Finlayson, G.D.

Hordley, S.D., Hubel, P.M. "Color by Correlation: A Simple, Unifying Framework for Color

Constancy,: IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 23, pp. 1209-1221,

2001 (Finlayson et al) in view of U.S. Patent Application No. 2003/0021472 to Nichogi et al

(Nichogi et al).

Claim 10 has been amended directly and by dependence on claim 1. Claim 10

comprises the elements of claim 1 with the further limitation of "wherein said

determining a match metric comprises calculating a chi-squared statistic related to the

variance of the image color gamut histogram relative to a candidate color gamut

histogram." This element and others included in claim 1 are not taught in the

combination of Finlayson et al and Nichogi et al.

Claims 12 and 13 are rejected under 35 U.S.C. §103(a), as being unpatentable over

Finlayson, G.D. Hordley, S.D., Hubel, P.M. "Color by Correlation: A Simple, Unifying

Framework for Color Constancy,: IEEE Trans. Pattern Analysis and Machine Intelligence, vol.

23, pp. 1209-1221, 2001 (Finlayson et al) in view of U.S. Patent No. 6,249,601 to Kim et al

(Kim et al) and further in view of Brainard et al (Daveid H. Frainard, William T. Freeman,

"Bayesian Color Constancy, Vol. 14 No. 7/ July 1997 / Journal of the Optical Society of

America, Pages 1393-1411).

Claim 12 has been amended. Claim 13 is dependent on claim 12 and is amended by dependence on claim 12, but has not been amended directly.

Claim 12, and claim 13 by dependence, comprise the element of "computing a match metric between said image color gamut histogram and said known illuminant sample distribution histograms, wherein said match metric is related to the sum of the differences between said image color gamut histogram values and corresponding illuminant sample distribution histogram values." The combination of Finlayson et al, Kim et al and Brainard et al do not disclose a match metric that is related to the sum of the differences between values in these two histograms. Accordingly, these claims are allowable in their currently amended form.

Claim 14 is rejected under 35 U.S.C. §103(a), as being unpatentable over Finlayson, G.D. Hordley, S.D., Hubel, P.M. "Color by Correlation: A Simple, Unifying Framework for Color Constancy,: IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 23, pp. 1209-1221, 2001 (Finlayson et al) in view of U.S. Patent No. 6,249,601 to Kim et al (Kim et al); in view of Brainard et al (David H. Brainard, William T. Freeman, "Bayesian Color Constancy, Vol. 14 No. 7/ July 1997 / Journal of the Optical Society of America, Pages 1393-1411) and further in view of U.S. Patent Application No. 2003/0021472 to Nichogi et al (Nichogi et al).

Claim 14 has been amended. Claim 14 now comprised the element of "wherein said computing a match metric comprises using a chi-squared statistic measuring the normalized squared difference between said image chromaticity histogram and said known illuminant color gamut histograms values" as well as elements of claim 12 on which claim 14 is dependent as discussed above in relation to claim 12. This element is

not taught in the combination of Finlayson et al, Kim et al, Brainard et al and Nichogi et

al. Consequently, this claim is allowable in its currently amended form.

In light of the amendments and arguments presented above, the examiner is

requested to withdraw these rejections and proceed with allowance of this application.

Respectfully submitted,

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